

IN THE DRAWINGS

Figure 1J has been amended to remove reference numbers 54 and the associated arrows to conform Figure 1J to the Specification, which does not define reference numbers 54. The amendment is shown in the attached annotated sheet and is included in the attached replacement sheet. Applicant respectfully submits the amendment is fully supported by the Specification as filed.

REMARKS

Claims 1, 2, 5, 6, 8, 9, 12, 13, 16, 17, 22, 23, 28, 29, 34, 35, 37, 38, 41, 47, 54, 56, 57 are currently amended. The drawings and Specification are also amended. Applicant respectfully submits that the amendments contained herein are fully supported by the Specification as originally filed and do not include new matter.

In the Specification

The disclosure was objected to. Paragraph [0001] has been amended to overcome the objection thereto. Paragraph [0020] has been amended to overcome the objection thereto. In particular, the second sentence of paragraph [0020] has been amended, as recommended by the Examiner. The third sentence of paragraph [0020] has been deleted in that it is apparent from the text and the figures, as originally filed, that the third sentence of paragraph [0020] was incorrect. Applicant respectfully submits that amending third sentence of paragraph [0020], as recommended by the Examiner, would make it redundant with the amended second sentence of paragraph [0020].

Paragraph [0030] has been amended to clarify the fifth sentence. However, the fifth sentence is correct as originally written. The amended version adds that source/drain semiconductive material 26 forms source/drain region 30/32, which comports with Figures 1H-1J. Applicant respectfully submits that amending "source/drain semiconductive material 26" to read "source/drain semiconductive material 46," as recommended by the Examiner, would make the fifth sentence incorrect.

In the Drawings

Figure 1J has been amended to remove reference numbers 54 and the associated arrows to conform Figure 1J to the Specification, which does not define reference numbers 54, as pointed out by the Examiner. Applicant respectfully submits that reference numbers 54 are not essential to understanding and enabling the invention. Applicant further submits that the amendment of Figure 1J overcomes the objection that elements 54 in Figure 1J are not defined anywhere in the Specification.

Claim Rejections Under 35 U.S.C. § 102

Claims 1, 5-6, and 47-49 were rejected under 35 U.S.C. § 102(b) as being anticipated by Subramanian et al. (U.S. Patent No. 5,481,126). Applicant respectfully traverses.

Claim 1, as currently amended, recites that a field isolation region laterally adjoins a first source/drain region and extends beneath only a portion of the first source/drain region and that a field isolation region laterally adjoins a second source/drain region and extends beneath only a portion of the second source/drain region. This is different from Subramanian et al. in that the Examiner has taken insulating layers 30 as corresponding to the field isolation regions of claim 1, and Figure 3L of Subramanian et al. shows that insulating layers 30 extend beneath the entire source (S) and the entire drain (D). Therefore, Subramanian et al. does not include each and every recitation of claim 1, so claim 1 should be allowed.

Claim 5, as currently amended, recites a first source/drain region on a first side of a channel region and having a polycrystalline portion, a second source/drain region on a second side of the channel region and having a polycrystalline portion, and first and second extensions of epitaxial silicon, the first extension of epitaxial silicon interposed between the first side of the channel region and the polysilicon portion of the first source/drain region and the second extension of epitaxial silicon interposed between the second side of the channel region and the polysilicon portion of the second source/drain region. This is different from Subramanian et al. in that the Examiner has taken a mesa region 25 as corresponding to the channel of claim 5 and monocrystalline semiconducting regions 32 (see Figure 3L) as corresponding to the first and second extensions of epitaxial silicon of claim 5. Moreover, Figure 3L shows monocrystalline semiconducting regions 32 as respectively corresponding to source (S) and drain (D) (see also column 5, lines 55-57). However, there is no indication or suggestion of any portion of monocrystalline semiconducting regions 32 being interposed between mesa region 25 and a polysilicon portion of monocrystalline semiconducting regions 32. Therefore, Subramanian et al. does not include each and every recitation of claim 5, so claim 5 should be allowed.

Claim 6, as currently amended, recites that the monocrystalline silicon substrate comprises monocrystalline silicon having a first conductivity type, the source/drain regions comprise polysilicon having a second conductivity type opposite the first conductivity type, and the epitaxial silicon has a conductivity type. There is no indication or suggestion of this in Subramanian et al. Therefore, Subramanian et al. does not include each and every recitation of claim 6, so claim 6 should be allowed.

Claim 47, as currently amended, recites a first source/drain region on a first side of a channel region and having a polysilicon portion, a second source/drain region on a second side of the channel region and having a polysilicon portion, and an extension of epitaxial

monocrystalline material formed on the bulk semiconductor substrate so as to extend away from each side of the channel region, where a first extension of epitaxial monocrystalline material is interposed between the first side of the channel region and the polysilicon portion of the first source/drain region and a second extension of epitaxial monocrystalline material is interposed between the side of the channel region and the polysilicon portion of the second source/drain region. This is different from Subramanian et al. in that the Examiner has taken a mesa region 25 as corresponding to the channel of claim 47 and monocrystalline semiconducting regions 32 (see Figure 3L) as corresponding to the epitaxial monocrystalline material formed on the bulk semiconductor substrate so as to extend away from each side of the channel region of claim 47. Moreover, Figure 3L shows monocrystalline semiconducting regions 32 as respectively corresponding to source (S) and drain (D) (see also column 5, lines 55-57). However, there is no indication or suggestion of any portion of monocrystalline semiconducting regions 32 being interposed between mesa region 25 and a polysilicon portion of monocrystalline semiconducting regions 32. Therefore, Subramanian et al. does not include each and every recitation of claim 47, so claim 47 should be allowed.

Claims 48 and 49 depend from claim 47 and are thus allowable for at least the same reasons as claim 47. Therefore, claims 48 and 49 should be allowed.

Claim Rejections Under 35 U.S.C. § 103

Claims 8, 12-13, 37, and 56-57 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Subramanian et al. as applied to claims 1, 5-6, and 47-49 above, and further in view of Jacob Millman, *Microelectronics: Digital and Analog Circuits and Systems*, McGraw-hill, 1979, pp. 289, 295. Claims 16 and 19-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Subramanian et al. as applied to claims 1, 5-6 and 47-49 above, and further in view of Wieczorek et al. (U.S. Patent No. 6,274,894). Claims 28, 31-35, 37, 41-46, and 51-53 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Subramanian et al. as applied to claims 1, 5-6, and 47-49 and/or the combination of Subramanian et al. with Wieczorek et al. as applied to claims 16 and 19-25 above, and further in view of Millman. Applicant respectfully traverses.

Claims 8 and 37, as currently amended, each recite that a field isolation region laterally adjoins a first source/drain region and extends beneath only a portion of the first source/drain region and that a field isolation region laterally adjoins a second source/drain region and extends

beneath only a portion of the second source/drain region. As indicated above in conjunction with claim 1, this is different from Subramanian et al. Therefore, claims 8 and 37, as currently amended, are patentably distinct from Subramanian et al. Moreover, Subramanian et al. in combination with Millman fails to overcome the deficiencies of Subramanian et al. with respect to claim 8 or 37. Therefore, claims 8 and 37 are allowable over Subramanian et al. in view of Millman.

Claim 12, as currently amended, recites a field isolation region laterally adjoining a first source/drain region and extending beneath at least a portion of the first source/drain region and extending beneath only a portion of the first extension of epitaxial silicon, and a field isolation region laterally adjoining a second source/drain region and extending beneath at least only a portion of the second source/drain region and extending beneath only a portion of the second extension of epitaxial silicon. This is different from Subramanian et al. in that the Examiner has taken insulating layers 30 as corresponding to the field isolation regions of claim 12 and monocrystalline semiconducting regions 32 (see Figure 3L) as corresponding to the first and second extensions of epitaxial silicon of claim 12. However, Figure 3L of Subramanian et al. shows that insulating layers 30 extend beneath the entire extent of monocrystalline semiconducting regions 32. Therefore, claim 12, as currently amended, is patentably distinct from Subramanian et al. Moreover, Subramanian et al. in combination with Millman fails to overcome the deficiencies of Subramanian et al. with respect to claim 12. Therefore, claim 12 is allowable over Subramanian et al. in view of Millman.

Claim 13, as currently amended, recites that first and second source/drain regions each have a polysilicon portion and that epitaxial silicon is interposed between a first side of a channel region and the polysilicon portion of the first source/drain region and between a second side of the channel region and the polysilicon portion of the second source/drain region. As indicated above in conjunction with claim 5, there is no indication or suggestion of this in Subramanian et al. Therefore, claim 13, as currently amended, is patentably distinct from Subramanian et al. Moreover, Subramanian et al. in combination with Millman fails to overcome the deficiencies of Subramanian et al. with respect to claim 13. Therefore, claim 13 is allowable over Subramanian et al. in view of Millman.

Claims 16, 28, 37, and 41, as currently amended, each recite a field isolation region laterally adjoining a first source/drain region and extending beneath only a portion of the first source/drain region, and a field isolation region laterally adjoining a second source/drain region

and extending beneath only a portion of the second source/drain region. As indicated above in conjunction with claim 1, this is different from Subramanian et al. Therefore, claims 16, 28, 37, and 41, as currently amended, are patentably distinct from Subramanian et al. Moreover, Subramanian et al. in combination with Wieczorek et al. fails to overcome the deficiencies of Subramanian et al. with respect to claims 16, 28, 37, and 41. Therefore, claims 16, 28, 37, and 41 are allowable over Subramanian et al. in view of Wieczorek et al. Further, Subramanian et al. with Wieczorek et al. in combination with Millman fails to overcome the deficiencies of Subramanian et al. with Wieczorek et al. with respect to claims 28, 37, and 41. Therefore, claims 28, 37, and 41 are allowable over Subramanian et al. with Wieczorek et al. and further in view of Millman.

Claims 19-21 depend from claim 16 and are thus allowable for at least the same reasons as claim 16. Claims 31-33 depend from claim 28 and are thus allowable for at least the same reasons as claim 28. Claims 42-46 depend from claim 41 and are thus allowable for at least the same reasons as claim 41. Therefore, claims 19-21, 31-33, and 42-46 should be allowed.

Claims 22 and 34, as currently amended, each recite a field isolation region laterally adjoining a first source/drain region and extending beneath at least a portion of the first source/drain region and extending beneath only a portion of a first extension of silicon-germanium alloy, and a field isolation region laterally adjoining a second source/drain region and extending beneath at least a portion of the second source/drain region and extending beneath only a portion of a second extension of silicon-germanium alloy. As indicated above in conjunction with claim 12, this is different from Subramanian et al. in that Subramanian et al. that does not indicate or suggest field isolation regions extending beneath only portions of first extensions. Therefore, claims 22 and 34, as currently amended, are patentably distinct from Subramanian et al. Moreover, Subramanian et al. in combination with Wieczorek et al. fails to overcome the deficiencies of Subramanian et al. with respect to claims 22 and 34. Therefore, claims 22 and 34 are allowable over Subramanian et al. in view of Wieczorek et al. Further, Subramanian et al. with Wieczorek et al. in combination with Millman fails to overcome the deficiencies of Subramanian et al. with Wieczorek et al. with respect to claim 34. Therefore, claim 34 is allowable over Subramanian et al. with Wieczorek et al. and further in view of Millman.

Claims 23 and 35, as currently amended, each recite that the monocrystalline silicon substrate comprises monocrystalline silicon having a first conductivity type, the source/drain

regions comprise polysilicon having a second conductivity type opposite the first conductivity type, and the epitaxial silicon has a conductivity type. There is no indication or suggestion of this in Subramanian et al. Therefore, claims 23 and 33, as currently amended, are patentably distinct from Subramanian et al. Moreover, Subramanian et al. in combination with Wieczorek et al. fails to overcome the deficiencies of Subramanian et al. with respect to claims 23 and 35. Therefore, claims 23 and 35 are allowable over Subramanian et al. in view of Wieczorek et al. Further, Subramanian et al. with Wieczorek et al. in combination with Millman fails to overcome the deficiencies of Subramanian et al. with Wieczorek et al. with respect to claim 35. Therefore, claim 35 is allowable over Subramanian et al. with Wieczorek et al. and further in view of Millman.

Claims 24-25 depend from claim 23 and are thus allowable for at least the same reasons as claim 23. Therefore, claims 24-25 should be allowed.

Claim 47, as currently amended, is patentably distinct from Subramanian et al. Moreover, Subramanian et al. in combination with Wieczorek et al. fails to overcome the deficiencies of Subramanian et al. with respect to claim 47. Therefore, claim 47 is allowable over Subramanian et al. in view of Wieczorek et al. Further, Subramanian et al. with Wieczorek et al. in combination with Millman fails to overcome the deficiencies of Subramanian et al. with Wieczorek et al. with respect to claim 47. Therefore, claim 47 is allowable over Subramanian et al. with Wieczorek et al. and further in view of Millman. Claims 51-53 depend from claim 47 and are thus allowable for at least the same reasons as claim 47. Therefore, claims 51-53 should be allowed over Subramanian et al. with Wieczorek et al. and further in view of Millman.

Claims 56 and 57, as currently amended, each recite that first and second source/drain regions each comprise a polysilicon portion and that an epitaxial monocrystalline material is interposed between a channel region and the polysilicon portions of the first and second source/drain regions. This is different from Subramanian et al. in that the Examiner has taken a mesa region 25 as corresponding to the channel of claim 56 or 57 and monocrystalline semiconducting regions 32 (see Figure 3L) as corresponding to the epitaxial monocrystalline material of claim 56 or 57. Moreover, Figure 3L shows monocrystalline semiconducting regions 32 as respectively corresponding to source (S) and drain (D) (see also column 5, lines 55-57). However, there is no indication or suggestion of any portion of monocrystalline semiconducting regions 32 being interposed between mesa region 25 and a polysilicon portion of monocrystalline semiconducting regions 32. Therefore, claims 56 and 57, as currently amended,

are patentably distinct from Subramanian et al. Moreover, Subramanian et al. in combination with Millman fails to overcome the deficiencies of Subramanian et al. with respect to claim 56 or 57. Therefore, claims 56 and 57 are allowable over Subramanian et al. in view of Millman.

Allowable Subject Matter

Claims 2-4, 9-11, 17-18, 29-30, 38-40, 50, and 54-55 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. Applicant has amended claims 2, 9, 17, 29, 38, and 54 as suggested by the Examiner. Applicant thus respectfully requests reconsideration and withdrawal of the objection, and allowance of claims 2, 9, 17, 29, 38, and 54.

Applicant has not rewritten claims 3-4, 10-11, 18, 30, 39-40, 50, and 55. Claims 3-4 depend from claim 2 and are thus allowable for at least the same reasons as claim 2. Claims 10-11 depend from claim 9 and are thus allowable for at least the same reasons as claim 9. Claim 18 depends from claim 17 and is thus allowable for at least the same reasons as claim 17. Claim 30 depends from claim 29 and is thus allowable for at least the same reasons as claim 29. Claims 39-40 depend from claim 38 and are thus allowable for at least the same reasons as claim 38. Claim 50 depends from claim 47 and is thus allowable for at least the same reasons as claim 47. Claim 55 depends from claim 54 and is thus allowable for at least the same reasons as claim 54. Therefore, claims 3-4, 10-11, 18, 30, 39-40, 50, and 55 should be allowed.


Applicant acknowledges that claims 7, 14-15, 26-27 and 36 were allowed.

CONCLUSION

In view of the above remarks, Applicant believes that the claims are in condition for allowance and respectfully requests a Notice of Allowance be issued in this case. If the Examiner has any questions regarding this application, please contact the undersigned at (612) 312-2208.

Respectfully submitted,

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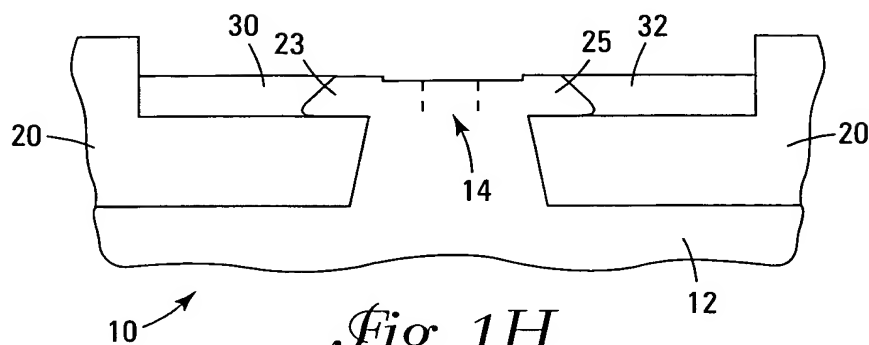


Fig. 1H

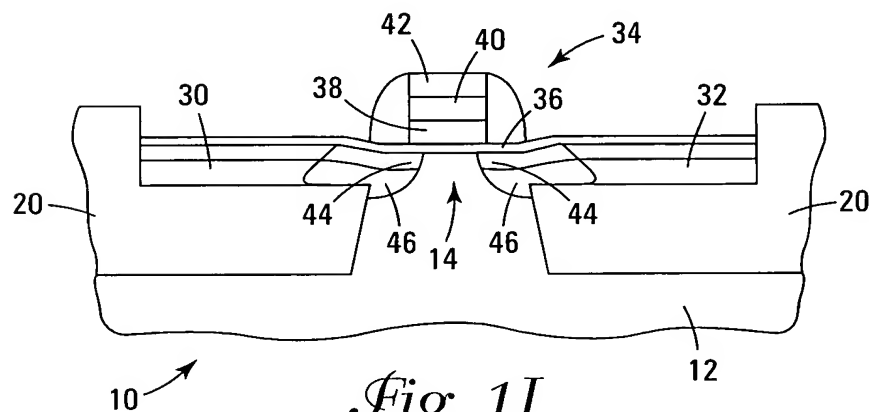


Fig. 1I

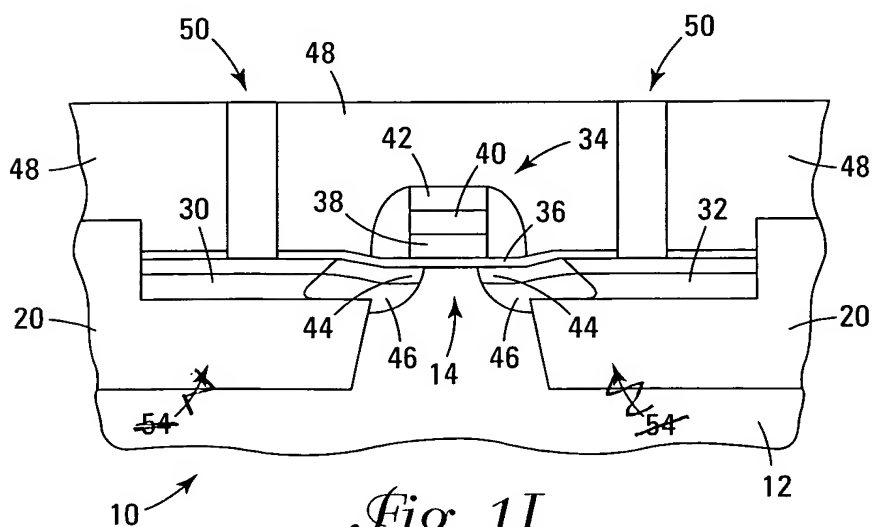


Fig. 1J